# AHJEONG SEO

Samsung Research
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## RESEARCH INTEREST

My primary research goal is to **develop robustly reasoning AI like humans** through structured and disentangled inference. Especially, I'm interested in the explicit and robust reasoning process via traversing over concept graphs constructed with neuro-symbolic approaches. Currently, I have researched improving logical reasoning performances of large-scale models with this method in Samsung Research.

## RESEARCH PUBLICATIONS

**Neuro-Symbolic Graph Reasoning for Robust Inference in Neural Sequence Models** (in preparation)
Ahjeong Seo, Joohyung Lee, *The First Workshop on UM-IoS: Unimodal and Multimodal Induction of Linguistic Structures (EMNLP 2022 Workshop)* December 2022

**Attend What You Need: Motion-Appearance Synergistic Networks for Video Question Answering**
Ahjeong Seo, Gi-Cheon Kang, Junhan Park, Byoung-Tak Zhang, *The Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021)* August 2021

**DramaQA: Character-Centered Video Story Understanding with Hierarchical QA**
Seongho Choi, Kyoung-Woon On, Yu-Jung Heo, Ahjeong Seo, Youwon Jang, Minsu Lee, Byoung-Tak Zhang, *Proceedings of the Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI 2021)* February 2021

**Sparse Self-Attention Mechanism for Learning Sequential Video Data**
Ahjeong Seo, Kyoung-Woon On, Byoung-Tak Zhang, *Korea Software Congress 2019 (KSC 2019)* December 2019

## WORK EXPERIENCE

**AI Methods Team, Samsung Research** Aug. 2021 - Now
*Researcher (Adviser: Joohyung Lee)* *Seoul, Korea*

- **Large-Scale AI**: While dealing with large-scale model applications for Samsung's services, I have researched a dual-system model complementing the reasoning limitations of large-scale models with a neuro-symbolic graph approach and plan to submit a paper to the EMNLP 2022 Workshop.
- **Neuro-Symbolic Contents Search**: Developed a search engine for movie contents considering both lexical and semantic clues in queries. Specifically, experimented with neural models for semantic search, contributed to a keyword search engine with Elastic Search, and collected and cleaned content data.

## RESEARCH PROJECT

**Video Turing Test** Sep. 2019 - Aug. 2021
*Researcher at Seoul National University (Adviser: Byoung-Tak Zhang)*

- Aiming to build an AI with human-level intelligence for video understanding, conducted research to robustly and explicitly reason via structuring information based on interdisciplinary knowledge. Specifically, based on the human visual information processing process, we proposed a model combining divided visual signals depending on texts for multi-modal reasoning in ACL 2021. Also, based on human cognitive development stages, we suggested DramaQA dataset and a baseline model for hierarchical video understanding in AAAI 2021.
- **Organizing Challenges and Workshops (ECCV 2020, ICCV 2019)**: Participated in organizing DramaQA challenges and Video Turing Test workshops, managed EvalAI challenge server, and built the homepage: `https://dramaqa.snu.ac.kr/`

## EDUCATION

**Seoul National University** Sep. 2019 - Aug. 2021
*Master of Science in NeuroScience* Seoul, Korea
Interdisciplinary Program in Neuroscience *(Adviser: Byoung-Tak Zhang)*
Thesis: Motion-Appearance Synergistic Networks for Video Question Answering

**Hanyang University** Mar. 2014 - Aug. 2019
*Bachelor of Engineering in Computer Engineering* Seoul, Korea
Department of Computer Engineering (minor in Industrial Engineering)

## INTERNSHIP

**Clova Biz AI, Naver Corp.** Nov. 2018 - Feb. 2019
**Apollo Backend, Naver Corp.** Jul. 2018 - Aug. 2018
*Intern* *Seongnam-si, Korea*

· Experimented with ML models depending on the purpose of a service demonstration or a website building project
· For research engineering, generated and pre-processed data, built docker environment and APIs, and developed the website with Spring Framework for backend, and jQuery Ajax, HTML, and CSS for frontend

## HONORS AND AWARDS

International Short-Term Dispatch Program Scholarship, Hanyang University Jun. 2016
Dean's Encouragement Award, Hanyang University Nov. 2014
Honors Scholarships, Hanyang University Sep. 2014

## EXTRA-CURRICULAR

**Algorithm Club at Hanyang University** Mar. 2014 - Aug. 2019
· Participated in algorithm study groups, and received Dean's Encouragement Award in an in-school competition

**Hanyang University Buddy Assistants** Jan. - Feb. 2018
· Organized and participated in many activities and helped foreign students to adapt to Korean culture and life

**Short-term Overseas Dispatch Program, University of Indonesia** Jul. - Aug. 2016
**Exchange Student, Nanyang Technological University** Jan. - May 2016
· Not only took classes but developed cultural competence via activities ranging from field-trip to in-school club

## SKILLS AND LANGUAGE

**Technical Skills** Pytorch, Tensorflow, Python, C++, C, HTML, R, Java
**Language Proficiency** Fluent in **English** and Native in **Korean**

## REFERENCES

**Byoung-Tak Zhang**
*Professor*

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**Joohyung Lee**
*Associate Professor / Vice President at Samsung Research*

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